Alternative Water Supply Evaluation
Olin/Standard Fusee Site
425 Tennant Avenue
Morgan Hill, California

Prepared for

Olin

CORPORATION
Charleston, Tennessee

MACTEC Project No: 6300-04-0015

Margaret E. Tanner
Senior Engineer

Frederick K. Marotte
Senior Principal Engineer

William J. O'Braitis, RG
Principal Geologist

REGISTERED GEOLOGIST
WILLIAM J O'BRAITIS
No. 6092
EXP: 7-31-05
STATE OF CALIFORNIA

April 16, 2004

MACTEC Engineering and Consulting, Inc.

Olin
P.O. BOX 248, 1186 LOWER RIVER ROAD, NW,
CHARLESTON, TN. 37310-0248

VIA: OVERNIGHT EXPRESS

April 16, 2004

Mr. David Athey
Water Resources Control Engineer
Central Coast Regional Water Quality Control Board
895 Aerovista Place, Suite 101
San Luis Obispo, CA 93401

Subject: **Alternative Water Supply Evaluation**
Olin/Standard Fusee Site
425 Tennant Avenue
Morgan Hill, California

Dear Mr. Athey:

As required by the Central Coast Regional Water Quality Control Board (RWQCB), enclosed is Olin Corporation's Alternative Water Supply Evaluation.

On February 27, 2002, Peter C. Kosche, Olin Corporation Senior Vice President, Corporate Affairs, granted specific authorization to Richard W. McClure as Olin Corporation's "duly authorized representative" to execute reports in the name of, and on behalf of, Olin Corporation.

Sincerely,
OLIN CORPORATION

Richard W. McClure
Environmental Remediation Group

/ ATTACHMENTS

cc: Mr. Eric Gobler, RWQCB – Central Coast Region
Mr. Curt Richards, Olin
Mr. Thomas Mohr, SCVWD
Ms. Sylvia Hamilton, CAG
Ms. Beverly Vessa, Olin/Standard Fusee Repository
Mr. Donald Smallbeck, MACTEC

EXECUTIVE SUMMARY

MACTEC Engineering and Consulting, Inc. (MACTEC) was retained by Olin Corporation (Olin) to conduct an evaluation of potential alternative supplies for water obtained from wells located south of the Olin/Standard Fusee Site, at 425 Tennant Avenue, Morgan Hill, California (Figure 1.1) with perchlorate concentrations above the California Department of Health Services (DHS) drinking water action level (AL) for perchlorate. This alternative water supply evaluation was conducted in response to the California Regional Water Quality Control Board, Central Coast Region (RWQCB) letter dated February 9, 2004 and the subsequent letter dated March 16, 2004.

Currently, bottled drinking water is supplied to residents located south of the Site with water supply wells where perchlorate has been detected at concentrations greater than or equal to the DHS AL of 6 parts per billion (ppb) and certain other wells. Neither a federal nor state Maximum Contaminant Level (MCL) has been established for perchlorate.

The objective of this Alternative Water Supply Evaluation Report is to identify and evaluate practicable alternatives to provide drinking water supplies to residents served by wells with perchlorate above the action level. This report will be used as a planning tool in the selection of alternative water supplies when a state or federal MCL has been established for perchlorate.

Water supply alternatives were developed for wells where perchlorate is present at specified levels which were selected based on the results of various sampling programs conducted within the Santa Clara Valley area and on information obtained from the Santa Clara Valley Water District (SCVWD). The SCVWD information used in this evaluation included well locations, well usage, well construction details, and average annual production rates. Not all SCVWD wells had this information available. Primary well usage, as reported by the SCVWD, was grouped into three categories: domestic, agricultural, and municipal/industrial. Where agricultural or industrial wells are also used for drinking water supply as a secondary use, these wells are included in this analysis.

The evaluation of water supply alternatives was conducted for wells with one or more detected concentrations of perchlorate greater than or equal to 40 ppb, 18 ppb, 10 ppb, 8 ppb, and 6 ppb. The numbers and types of wells affected are summarized in the following table.

Perchlorate Concentration (ppb)[1]	Total Wells	Domestic Wells	Agricultural Wells	Municipal/ Industrial Wells	Well Use Not Designated
=[2] 40	3	2	0	1	0
= 18	5	3	1	1	0
= 10	15	11	3	1	0
= 8	77	60	8	7	2
= 6	236	192	31	10	3

Notes:

[1] Perchlorate was detected at least one time at or equal to the concentration. The total number of wells for each concentration category included the wells in the next-higher category (e.g., the total wells in the 6 ppb category included the wells in the 8 ppb category).

[2] The symbol "=" stands for "greater than or equal to".

Water supply alternatives were defined for individual wells in the 40 ppb, 18 ppb, and 10 ppb concentration ranges. The primary evaluated alternatives (for the portion of the flow that is used for potable water supplies) consisted of:

- point of use (POU) treatment systems for faucets within a household; and
- point of entry (POE) treatment systems for the water supply to a house or multi-family unit.

Secondary alternatives considered in this evaluation were:

- well head treatment for a single well (similar to POE treatment);
- centralized treatment where water is collected, treated and returned to the well users;
- connecting well users to an existing potable water system;
- individual well modification (increase depth or use packers to isolate the well from zones with perchlorate); and
- utilizing nearby moderate and high production wells in areas with perchlorate detected below the current DHS AL of 6 ppb for distribution to well users.

To address the substantially increased number of wells in the 8 ppb and 6 ppb concentration ranges, water supply areas were identified for analysis. Within these areas potential collections of wells and existing area water supply systems were identified. The primary evaluated alternatives for these multi-user systems included well head treatment systems, and/or centralized treatment systems with distribution

networks to return water to individual users, and connection to existing public/municipal water supply systems. The evaluation for isolated individual wells was the same as for the higher concentration wells described above.

Considerations identified to successfully implement the water supply alternatives, but which were not analyzed in-depth at this stage of the evaluation include:

- Assessment of water usage patterns within the areas including peak flow rates and pumping capacities of existing systems;
- An assessment of the condition of existing supply wells;
- The total screen length and screen zones of existing wells;
- Access for installation, maintenance, and monitoring of POU, POE, and well head treatment devices;
- Rights-of-way and easements for construction and maintenance of collection and distribution systems;
- Water storage requirements;
- Permitting/Certification of POU, POE, well head, and centralized systems for perchlorate treatment;
- Construction permitting requirements;
- Operations and maintenance (O&M) and monitoring requirements; and
- Ownership of wells.

These and other issues will affect the ability to implement each alternative identified.

Due to these complexities and need for additional data, the potential alternatives presented in this report provide a preliminary evaluation of alternatives. Development of a detailed assessment will require (among other considerations) an evaluation of well production rates, acceptability of a selected alternative to regulatory agencies and well users, existing and future infrastructure needs, water usage rates; and agreements for access, use, and monitoring.